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PAPERS
IN
AGRICULTURE.

The GOLD MEDAL of the Society, the Premium offered in Class 44, was this Session adjudged to J. C. CURWEN, Esq. V.P. of Workington Hall, Cumberland, for Improving upwards of 400 Acres of Waste Land. The following Communications were received from him, and a Plan of the Land is preserved in the Society's Repository.

DEAR SIR,

I REQUEST, through your hands, to submit my claim for the Society's Premium, for the Improvement of Waste Lands.

In the course of the Year 1813, three hundred acres of Waste Land were inclosed, planted with thorns, and fenced with railing cut from some of those Plantations,

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for

for which I had the honour to receive the Society's Medal. The whole was pared and burnt; two hundred and eighty acres were sown with Wheat, twenty with Oats, at a cost of six pounds eighteen shillings and eight pence per acre; viz. paring one guinea, burning ten shillings, scaling five shillings, eighty Winchester bushels of lime one pound six shillings and eight pence; plowing, harrowing, &c. one pound six shillings; three-and-a-half Winchester bushels of seed two pounds ten shillings.

The Crop was most promising, but suffered from the unfavourable Summer, as I fear a great proportion of the wheats have done. I do not therefore calculate on more than twenty Winchester bushels per acre of marketable Grain.

Though I may be allowed to feel some pride in the accomplishment of so extensive an undertaking, I do not make my claim on that ground for the favour of the Society, but flatter myself the plan I have adopted for bringing such lands into a regular course of crops, holds out great advantages for the farmer as well as the public.

The first inclosed lands in this country thirty-five years ago, bore for some time most luxuriant crops, but, by a continuation of white crops, the ground was so deteriorated that it has never recovered. There is too much reason to apprehend a recurrence of the same thing on the extensive tracts of waste now under cultivation; covered as they are with most luxuriant crops, much of the pleasure the sight is calculated to produce, is lost in contemplating that a few years will, in a great measure, destroy their fertility.

There are, within the last ten years, above two hundred thousand acres of new inclosure. Within this period Cumberland imported a hundred and fifty thousand pounds worth of grain. It now exports nearly three hundred thousand

thousand pounds worth, with increase of population of one ninth. If I should be so fortunate as to obtain the honor I solicit, it may draw the attention of the country to what I have done, and prevent a serious public, as well as private injury. Great Britain can never be well supplied with grain, till we are an exporting country. The variations of seasons will be equal to a fourth; to provide for this, the surplus produce in average years should be equal to it. Grain would not, under such circumstances, be subject to the fluctuations of price which have occurred so frequently of late years.

The distance of my new inclosed lands from my other farm buildings prevents the bringing of manure with any prospect of return. I had forty acres at the distance of three miles from the Schoose farm; it was cropped with wheat. I had no possible means of taking green crops with any view of its re-paying me; this decided my fallowing it, and burning such sods and roots as I could collect; a few ashes were furnished by this means; to these I added a second dose of lime, equal to the first, and sowed it with wheat, in this I committed an error; oats would have paid me better. The second crop was moderate; the clover most abundant, yielding fully two tons and a half of hay, and it is covered at this moment with a most luxuriant plant of clover. The appearance of this crop has procured me a most desirable tenant for Lilly Hill upwards of four hundred acres.

	£.	s.	d.
Cost of the first Crop -	8	18	8
Fallow - - -	8	0	0
Four years' Rent and Taxes	8	0	0
Clover, Seed, &c. -	2	0	0
	26	18	8

First Crop of Wheat sold for	16	0	0
Second Ditto	-	10	0 0
Clover	-	10	0 0
		<hr/>	
		36	0 0
		<hr/>	

The profit above two pounds fifteen shillings and sixpence per acre, the ground originally worth two shillings and sixpence per acre, now forty shillings. If I had made my Irish tour previous to my laying this land down, I could have done it better. I there saw, with great delight, the prodigious crops obtained by burning the soil. I lost not a moment on my return to carry this mode into effect. I have burnt some thousands of cart loads. Sixty acres are prepared for wheat, with fifty cart loads of these ashes, and sixty Winchester bushels of lime. I have guaranteed this crop to produce twenty-seven Winchesters per acre. I conceive the ashes may be burnt for 8*d*. a cart load, and on the very spot where they are wanted.

I have this year broke up a hundred acres of new inclosure, and left patches of ground here and there, for burning for the next crop. By this plan, in three years I got two white crops, and have my land laid down in high condition without the assistance of dung.

This is not all the benefit, for I have the command of the manure produced from the new inclosure, to confirm the condition of the land within distance of my farm buildings. It naturally opens a new speculation, if ten tons of manure produce thirty tons of turnips, what will twenty do? Clay soils can scarcely be overdosed with manure; I shall try to what extent it may be carried. I have finished my harvest, having cut twenty thousand shocks; fourteen thousand of wheat, the whole is stacked.

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I am very sanguine in my expectation of gratifying the Society with a view of the advantages of soiling in rearing cattle. I have seventeen calves bringing up, which will give a fair opportunity of judging of the experiment. In my way to Dumfries lately, I met with Mr. Church, one of the most distinguished farmers in this quarter; he assured me that he never had finer turnips than he has this year from ashes alone, and that all his neighbours are following his example.

I remain faithfully, Dear Sir,

Your obliged Friend,

J. C. CURWEN.

Workington Hall, Sep. 17, 1814.

To C. TAYLOR, M.D. SEC.

CERTIFICATES.

WE do hereby certify, that the plan now sent, is a true statement of the Common or Waste Land of John Christian Curwen, Esq. of Workington Hall, Cumberland, broken up, inclosed and cultivated by him in the township of Workington, in the parish of Workington, under an Act passed in the forty-ninth year of his present Majesty: and that the parts coloured green in the plan, amounting to 163 acres, 2 roods, and 26 perches, were cropped in 1814 in hay and grass; and the parts coloured yellow, amounting to 255 acres, were cropped in the same year in wheat; and that the whole amounting to 418 acres,

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2 roods,

2 roods, and 26 perches, is well fenced, and in most excellent condition.

Witness our Hands, this 24th of January, 1815,

JOHN LITT, a Commissioner under the said Act.

BEN. THOMPSON, Clerk to the Commissioners.

WM. HOODLESS, Surveyor.



* * * By order of the Committee of Agriculture, several questions were proposed to Mr. Curwen for elucidation, upon which the following letter was received in answer.

MY DEAR SIR,

I HASTEN to acknowledge and thank you for your obliging letter, and I have great pleasure in furnishing the Society with the information they require respecting the burning of soil.

The most approved mode in Ireland, and that which is attended with the least labour, is to leave a circular space of land, from ten to twenty feet in circumference for placing the fire. Alternate circles of a foot broad, eight inches in length, and as much in depth, are cut out and laid to dry on an equal space. The quantity cut and left is regulated by the size of the place appropriated for the fire, it rarely exceeds twenty yards, by which means one person can manage the fire. When the sods are sufficiently dry for burning, a kiln is formed of fresh cut sods, and the walls hard beaten to prevent the air from penetrating. An air-hole is left opposite to the side. When
the

the fire is placed, as the ashes increase the walls of the kiln are carried up. The fire is lighted with turf or wood, and the dry sods. When a proper degree of fire is raised, the dry and wet sods cut from those left are mixed, so as to moderate the strength of the fire. In the regulation of the fire, the whole mystery consists ; if it is too strong, it calcines the mixture.

I burnt my ashes last year in square holes of great size, containing seven or eight hundred single horse cart loads each ; this causes a much greater labour, both in wheeling the sods and erecting scaffolding to get the sods on the kiln. The danger of calcining is greater when there is so large a body of fire.

I am inclined to believe that when the sods have a good deal of roots of grass and are quite dry, they may be burnt without a kiln, but I have not as yet had sufficient experience to recommend it ; if it can be done, it will save a great deal of labour. I calculate on burning the ashes at eight pence a cart load.

I understand that Mr. Wallace, a farmer near Kilcuthbright had admirable turnips with thirty single carts of ashes. I have my doubts as to the weight of a single cart : I conjecture sixty stone ; Mr. Wallace thought eighty. Mr. Church, of Kitchell, near Annan, had very weighty turnips last year from ashes. Mr. Wallace thought, spreading the ashes before gathering into stiches, answered as well as depositing the ashes in the drill. If so, much trouble is saved. I should not recommend less than forty carts. Mr. Wallace's ashes were made entirely from clay, and would consequently be stronger than from a mixture of soil.

To burn clay alone will require the assistance of wood. I have cut a great extent of sods ; the unceasing wet of

last month has prevented my being able to do any thing in burning. I purpose to have fifty acres of turnips from ashes this year. There are numbers in this county and neighbourhood who propose burning. I expect it will do much in extending the growth of turnips. A further and most material advantage will arise, it will enable the Farmer to give an increased quantity of manure to potatoes. My potatoes have this year 33 tons, Swedes 30. I used to suppose two thousand stones of potatoes an abundant crop. I confidently expect 2600 from this manuring; admitting the produce of the whole course to be proportionably augmented, the increase of cost will be amply repaid. I consider this as a most interesting experiment for clay and strong soils. I shall shortly send to the Society a copy of the Report of the Workington Agricultural Society, when you will see a most valuable Communication respecting an Experiment of Mr. Stewart, of Fife.

I am now feeding my stock with Swedish turnips pulled in October; there is scarce a decayed turnip to be found amongst them. I sent some last week to Edinburgh to convince the farmers there of the advantage of pulling and stacking turnips.

I hope shortly to send you a paper on rearing stock on the soiling system; it bids fair to exceed my utmost expectation, sanguine as I admit myself to be. I think I shall bring my two years old to a hundred stone live weight, (fourteen pounds to the stone.) Killing above 50 stone, and this on the produce of two acres, straw not included.

If so, this will be the greatest product of victuals that has ever been obtained. If animal food could be made so cheap as to be in general use, it would greatly lessen
the

the consumption of bread. I think it is possible. I have numerous visitors, who express their astonishment at the size and condition of the stock.

I am,

Dear Sir,

Your obliged humble servant,

J. C. CURWEN.

Workington Hall, April 2, 1815.

TO C. TAYLOR, M. D. SEC.

The GOLD MEDAL, the Premium offered in Class 14, was this Session adjudged to BACKE THORNHILL, Esq. of Stanton, near Bakewell, in Derbyshire. The following Communication was received from him respecting his extensive Plantations of Forest Trees.

SIR,

I BEG leave to trouble you with the enclosed account of the plantation made by me in the Winter of 1811-12, for which I hope to obtain the Gold Medal offered by the Society in Class 14 this year.

I have endeavoured to state all such particulars as I conceive may be interesting, and I have got Certificates to the statement from persons who are all in public situations

situations in business and entirely unconcerned with and independent of the undertaking.

I am, Sir,

Your most obedient humble Servant,

BACKE THORNHILL.

*Stanton, Bakewell, Derbyshire,
Dec. 1, 1814.*

TO C. TAYLOR, M. D. SEC.

STATEMENT.

Mr. Backe Thornhill, of Stanton in the Peak, in the county of Derby, upon the inclosure of the adjacent common, designed to plant such part of his allotment as should be unfit for Agricultural purposes.

Agreeably to this plan, he inclosed and planted one hundred and sixteen acres of this land, between the 1st of October, 1811, and the 1st of April, 1812. On the most elevated part, where the soil is a bad grit-stone, producing nothing but the shortest heath, he planted two years old transplanted Larches and Scotch Firs only; on the elevated adjoining spots where the Heath grows longer, indicating a better soil, he mixed Spanish Chesnuts, Wych Elms, Beech, and Ash, of a larger size with the Firs, which were also a year older; and on the lower situations where a strong Fern appears instead of the Heath, he planted Oaks, Spanish Chesnuts, and Wych Elms, with Larch, Scotch, and Spruce Firs, as nurses for the deciduous trees, the best of which (chiefly Oaks and Chesnuts) it is intended to leave for timber.

The

The making of the holes was let after the hay harvest in 1811, to the poor people in the neighbourhood.

Those on the high land for the smaller plants were sixteen inches square, and three and a half feet asunder, making 3556 per acre, those on the lower land for the larger plants were twenty inches square and deeper in proportion, and at four feet distant from each other, making 2722 holes per acre. For each kind of land holed in this manner, the soil being well broken with the hack, and the work in all respects approved by Mr. Thornhill's Bailiff, thirty shillings per acre were allowed, and in such cases as the Bailiff found the work ill done, he, according to the prior agreement, made such deductions from the payments as he thought sufficient to pay other people for completing it.

When the earth of the holes by exposure to the weather had become friable, the plants were placed therein by the neighbouring poor, who have been in the habit of doing this sort of work at daily wages under the directions of Mr. Thornhill's nursery men.

The success of this plan has been evinced by the few losses of plants which have occurred and by the flourishing state in which they appear, considering the peculiarly bad soil in which they grow.

To this plantation (for which the Gold Medal is claimed) others have since been added, making on these otherwise unproductive parts of the late common of Stanton, upwards of two hundred and seventy acres of thriving wood land, well inclosed and intersected with carriage roads, and which are calculated to afford, beside the usual advantage of ornament and profit, a valuable shelter to the adjacent lands, which are in peculiar want of such protection.

CERTIFICATES.

CERTIFICATES.

WE do hereby certify, that the plantations referred to in the above statement are well fenced and secured, and the plants appear generally to be healthy, and in a growing state.

JOHN NUTTALL, Land Surveyor, Matlock.

WM. BRITTLECOMB, Attorney, Winstey,
Derbyshire.

P. GELL, M. P.

WM. PONTEY, Author of the Profitable
Planter, &c.

The GOLD MEDAL of the Society, the Premium offered in Class 42, was this Session adjudged to HENRY COAPE, Esq. of Gloucester Place, Portman Square, for gaining 110 Acres of Land from the Sea. The following Communications were received from him, and a Plan of the Land is preserved in the Society's Repository.

SIR,

ABOUT two years ago I purchased from Mr. Richard Croft, of Burlington Street, London, the Farm, called Bridge Marsh, which comprized the whole of an island, or Bank of Saltings, situated in the Crouch river, in the parish

parish of Lutchingdon, in the county of Essex; the whole of which was overflowed seventy years ago at spring tides, and of which about 200 acres were inclosed from the tide, and were under culture at the time of my purchase, and have been so ever since. The island is of an oval or oblong form; and observing that at each extremity there still remained some quantity of Salt Marsh uninclosed and quite useless, I resolved to make an effort to render this marsh productive.

A very rapid current and strong tide prepared me for great expence and labour, and the work has not been completed without a large portion of each. The soil is an excellent strong clay earth with loam, and I hope it will, in a very few years, become good pasture and arable land.

The wall is composed of the soil itself, dug from a ditch which runs along the inside of the wall, and additional soil taken from the fore and back ground.

As new walls always sink or settle, it must occasionally be new topped with the same materials, so as to keep it two feet above the highest tide. It will become more solid and compact by the growth of a wiry coarse grass, which comes naturally but gradually: it is not usual to sow any other grass upon sea walls in Essex.

The embankment of both ends is about 4760 yards in extent; the average height above the surface of the land is five feet perpendicular; the average width at the base is about twenty-eight feet, the width at the top about five feet; the fore land towards the sea is twenty feet, the back fore land fifteen feet wide. The rain which falls on the land is let out at low water through two sluices, or gutters, one foot square, one gutter in each piece. The quantity inclosed is about 110 acres. I send herewith a sketch

sketch of the map, and am willing to exhibit the map itself, if desired.

I have the honor to be,

Sir,

Your most obedient Servant,

HENRY COAPE.

Gloucester Place, Portman Square,

Nov. 26, 1814.

TO C. TAYLOR, M. D. SEC.

CERTIFICATES.

WE whose names are here underwritten: the Churchwarden, Surveyor, Overseers, and Inhabitants in the parish of Lutchington, in the county of Essex, hereby certify that two pieces of salt marsh land, one at the East end, the other at the West end, of an island in or near the centre of the river Crouch, which island is known by the name of Bridge Marsh Farm; and which two pieces, now inclosed, contain together 110 acres, or thereabout, have, within the last twelve months been inclosed by Mr. Henry Coape, of Gloucester Place, London, from the river Crouch, and that the land which was overflowed every spring tide, is now preserved from inundations, and from being useless marsh land, is likely to become shortly valuable and productive.

WILLIAM RUSH, Churchwarden.

JACOB DINES, Surveyor of Works.

JOHN GLASCOCK, Overseer.

JAMES BAKER.

SIR,

SIR,

THE land inclosed being in the very centre of the rapid river Crouch, and subject to very high tides, was attended with far more expense than the usual cost of such works. I contracted for the job to be completed for £2600 of which sum £2000 was the estimate of the outward walling, and £600 for internal divisions into fields of about ten acres each, by banks, with a deep ditch on each side of the bank, and gates with posts and rails in each division or field. The workmen made use of barrows and hurdles in carrying the mud or ouse. The inland drains are cut deep, each conducting the inland water to the gutters or sluices which let it out into the river at low water.

Since being completed, my tenant informs me that the outward wall has stood some of the highest tides known for many years, and has cost only five pounds in repairs of the damage, but it requires frequent topping in proportion as it sinks, as being formed of mud only, it may not be quite solid till next year.

By fore-lands before mentioned, I mean the distance between the wall and the river on one side, and the wall and the ditch on the other. I shall be happy to give the Society any further information, and obliged by any questions to elucidate such undertakings. I may probably pursue this object further.

I have the honour to be,

Sir,

Your most obedient servant,

HENRY COAPE.

18, Gloucester Place, March 29, 1815.

To C. TAYLOR, M.D. SEC.

Ten

TEN GUINEAS *were this Session voted to Mr. JAMES OGDEN, at T. D. ASTLEY's, Esq. Duckinfield Lodge, Ashton-under-Line, for improved Garden Shears, or Pruning Instruments. The following Communication was received from him, (an explanatory Engraving is annexed) and the various Instruments are preserved in the Society's Repository.*

SIR,

I HAVE sent to the Society three pair of Shears, or Implements for Pruning, on a new construction. The general principle of them differs in action from that of the common cutting shears, which tend to force from them the object intended to be cut; whereas, the shears now sent are so contrived as to draw nearer to them the article to be cut, without making a false stroke. The effect is produced, with some difference of mechanical construction, in each of the implements sent.

I remain,

Sir,

Your humble servant,

JAMES OGDEN.

Duckinfield, May 18, 1813.

TO C. TAYLOR, M. D. SEC.

SIR,

SIR,

I HAVE the pleasure to acquaint you, that hundreds of my shears are now in use in this country, and are every where approved of. There is scarcely any gentleman, farmer, or gardener in this neighbourhood, who does not use them.

I remain,

Sir,

Your obedient servant,

JAMES OGDEN.

Duckinfield, May 23, 1815.

TO C. TAYLOR, M. D. SEC.



Reference to the Engraving of Mr. OGDEN's Pruning Shears. Plate 1. Fig. 1, 2, 3, 4, 5, and 6.

FIG. 1, shews a pair of small pruning shears, which possess the property of the chop *d* holding the branch, while the knife chop *b* moves in its groove on the joint pin *c*, the motion of which is directed by the bar *d*, and the traverse motion of the knife chop cuts the branch with the least possible exertion, and of any magnitude that it is capable of embracing; and the spring *e*, Fig. 2, throws open the shears as soon as it separates the branch, and is thereby rendered ready for a second operation. Fig. 2, is a view of the other side of the shears, nearly closed with the catch bar *f*, which is intended to keep them shut when not in use.

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Fig.

Fig. 3 and 4 are shears on the same principle, with long wood handles, and without a spring to throw them open.

Fig. 5 are a pair of long shears, to embrace several small branches at a time; they have long handles, and the joint is thrown below the cutting edges about three inches as shewn at *g*, and the chop *h* is confined close to the chop *i* by the staple frame *k*. These shears are rendered superior to all others, by the advantages of combining the drawing motion with that of the common shear and scissor motion.

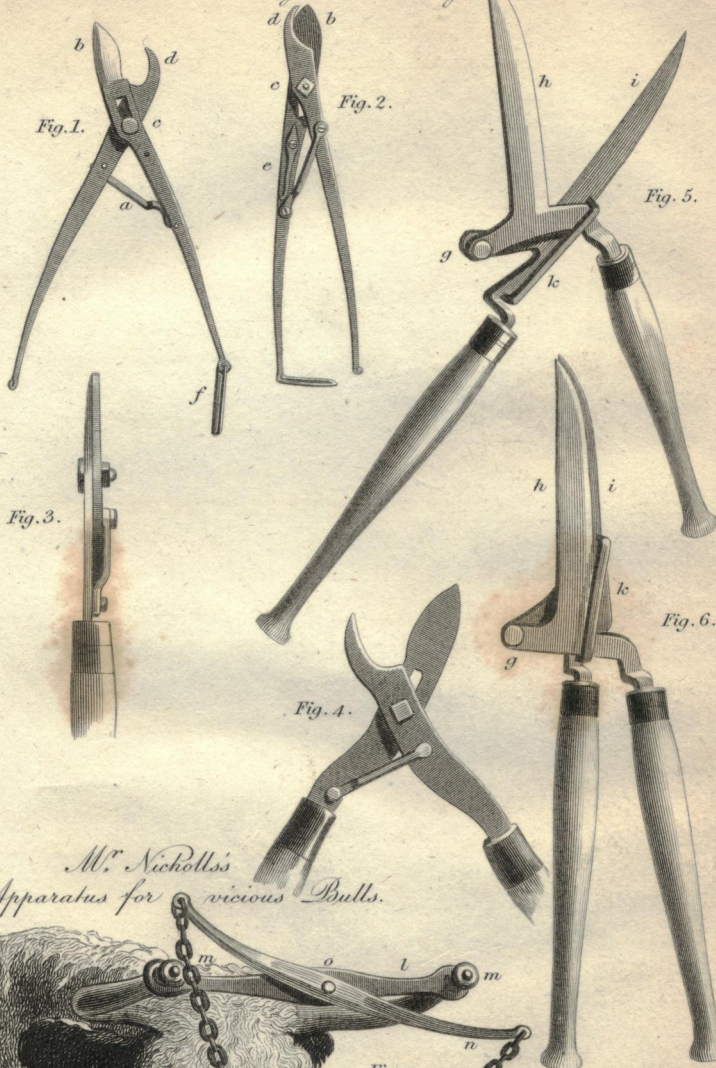
Fig. 6 is a view of these shears in a shut position.

The SILVER MEDAL was this Session voted to HENRY JAMES NICHOLLS, Esq. of Wood House, near Wisbeach, Cambridgeshire, for his useful method of preventing vicious Bulls from doing mischief. The following Communications were received from him (an explanatory Engraving is annexed) and a complete Apparatus is preserved in the Society's Repository.

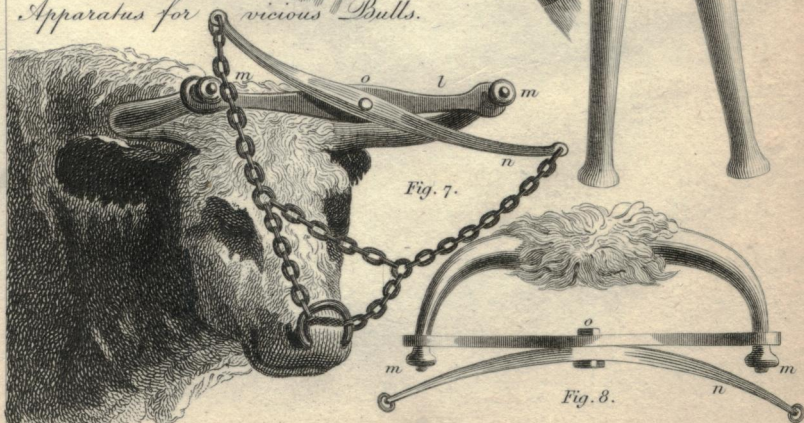
SIR,

IT being a primary object with all classes of people and institutions to assist in preserving the lives of our fellow-creatures, I beg leave to recommend to the Society of Arts the apparatus I have invented to prevent bulls doing any mischief. I have adopted it for some
time

M^r. J. Ogden's Pruning Shears.



M^r. Nicholls's Apparatus for vicious Bulls.



time and have now a bull wearing one, who prior to its being put on him, would attack a man either on foot or horseback, and in one instance had nearly killed a person. Since this preventive apparatus has been put upon him, he seems aware of the effect, and dare not face any one. He first tried it by rubbing his head against a post, when the lever caused the ring to hurt his nose, and he left it immediately. This apparatus prevents any bulls from lifting gates or breaking down fences with their horns, as immediately when the horn is attempted to be employed, the lever causes the ring to check the nose, which gives the animal instant pain. He then relinquishes the object, and does not make a second attempt. When we observe that the weight of a bull-dog will hold a bull's nose to the ground, we may readily suppose that he cannot or will not dare to attempt to lift much weight by his nose, and the lever is so constructed, as to cause every attempt made with the horn immediately to affect the nose. The straight bar from each horn may be either made of strong ash wood or iron. The swing lever should be made of iron. The chains and ring for the nose need not be very heavy.

Many valuable bulls have been obliged to be destroyed, and their breed lost, for want of means to prevent their doing mischief; and many lives have been lost by vicious bulls.

No bull, however quiet, ought to be without such a guard or preventive; it costs but little, is not unsightly, nor does it in the least injure them, or prevent their feeding. When a bull is guarded by one of these, he may with safety be turned amongst horses, or any other stock, without the least danger.

If my endeavours should be deemed worthy of the notice of the Society, it will give me great pleasure.

I remain,

Sir,

Your obedient servant,

H. J. NICHOLLS.

Wood House, near Wisbeach, Cambridgeshire,

Dec. 14, 1814.

TO C. TAYLOR, M.D. SEC.

P.S. If a bull is very active and refractory, he may be prevented from running, or even walking fast, by placing a small weight upon either end of the swing lever; this would give the animal such pain, by throwing the lever out of its equilibrium, and constantly irritating the nose by any extra action of the body, that he would soon be glad to stop.

*Reference to the Engraving of H. J. NICHOLLS's, Esq.
Apparatus for preventing vicious Bulls doing Mischief.*

Pl. 1. Fig. 7 and 8, shew a view of a machine to prevent vicious bulls from doing mischief with their horns. The iron bar *l* is screwed on the bull's horns by nuts *m m*, to the middle of which bar is attached a swinging iron bow *n*, which has a flanch in the centre, and which bow revolves on the pivot *o*. At the ends of the swinging bow are attached chains, which are connected to a ring fixed in his nose, so that which ever way he attempts to gore, the other end of the bow being elevated by it, pulls his nose in a contrary direction, and makes him desist.

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The SILVER CERES MEDAL was this Session voted to H. B. WAY, Esq. of Bridport Harbour, Dorsetshire, for preserving Carrots fit for Food during the Winter Months. The following Communications were received from him.

DEAR SIR,

I OBSERVE in the Society's list of premiums one offered under the head of Agriculture, No 33, for preserving carrots, &c. fit for use, and which seems to have been offered some time without any successful claimant ; I am therefore led to submit to the Society a trial I made last year, on a small scale, for preserving carrots for my own family use. I have, by the Schooner Alert, J. Hours, master, bound to Downe's wharf, sent a cask of carrots to your address. They were grown in my garden at this place, and were taken out of the ground on the 20th of August last, and have been out of it ever since ; they were, when shipped on Monday last, as good as when first taken up, except that they require nearly double the time in boiling that young carrots do before they will be thoroughly dressed. Should the Society think the communication worth their notice, and wish for any further information on the subject, I shall give it with much pleasure, on being favoured with a line from you. In the mean time I am with great respect,

Dear Sir,

Your obliged and obedient servant,

H. B. WAY.

Bridport Harbour, March 21, 1815.

TO C. TAYLOR, M. D. SEC.

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DEAR

DEAR SIR,

IN reply to your esteemed favour of the 25th instant, I am glad to hear that the carrots are safe arrived. I am well aware that I fall far short of the conditions to enable me to claim the Society's Premium; but should they deem me worthy of any part thereof, or a Reward, it will be most gratefully acknowledged.

The only thing I have to observe respecting the carrots is, that they were sown broadcast in the usual way, in my garden, at this place, March 23d, 1814, and thinned out, as wanted for family use; and on the 20th of August following, they were all dug up, the greens and tops of the roots cut off and cleared from the earth that adhered to them, and immediately the carrots put in a dry cask, first laying a layer of earth on the bottom of the cask, and then a layer of carrots and earth alternately, till the whole be put in, and a cover put on the cask. The cask was then placed in a dry cellar, and remained there till sent to you. This is the second year that I have preserved them in this way; and I think them vastly superior to carrots that remain in the ground till the latter end of September or October, and then taken up and preserved. I boiled some of my carrots this day week, and thought them full as good as when they were first packed in the cask; but as I before observed, they require nearly double the time in boiling that carrots do when immediately taken out of the ground.

I am, very respectfully,

Dear Sir,

Your obedient humble servant,

H. B. WAY.

Bridport Harbour, April 27, 1815.

TO C. TAYLOR, M. D. SEC.

* * * It appeared to the Committee, on minute examination, that the means adopted by Mr. Way for preserving carrots, is fully adequate to the purpose; and that where an opportunity offers of procuring proper casks, carrots may be preserved for many months, in this mode, either for exportation or home use, in a perfectly sound state.

FIVE GUINEAS were this Session voted to Mr. WM. BOWLER, of Church Lane Strand, for an Apparatus for drying Corn or Pulse in bad Seasons. The following Communications were received from him, an explanatory Engraving is annexed, and a Model of the Apparatus is preserved in the Society's Repository.

SIR,

I HAVE the pleasure to inform you, that after a long time and much trouble I have invented a machine, which is portable, and will dry grain or answer a number of other purposes. I think this machine is in many respects beyond any that I have hitherto invented.

1st, It is very portable, and may be easily removed from one house so another.

2ndly, The grain, or any article to be dried, may be turned by one man, and dried more equally than in the usual modes:

3dly, In turning the grain, the whole which was at the bottom is moved at once to the top, very different from the common way of turning it by the shovel, which does the business unequally, exposing part of the dried corn again to the action of the heat.

4thly, It also contains a small place for baking and boiling, and other uses.

It may be heated with common coal without affecting the grain, which will be cheaper than using coak.

I hope the gentlemen of the Society will approve of it, as the corn-chandlers have done, as in wet seasons it will be found very useful. I have inclosed Certificates from them of their good opinion of it.

I am, Sir,

Your obedient humble Servant,

WILLIAM BOWLER,

*No. 8, Church Lane,
Near St. Martin's Church, Strand,
March 1st, 1815.*

CERTIFICATES in favor of this apparatus were received from the following corn-dealers;—Mr. J. MILL, Surry Street, Strand, Mr. WILLIAM. BELL, No. 62, Haymarket, Mr. THOMAS DUFFOUR, No. 36, Old Compton-Street, Mr. JAMES WIFFIN, King-Street, Westminster, Mr. P. WOODMAN, at Mr. S. OSMOND'S, No. 14, Piccadilly, Mr. MATTHEW SENDEN, Tothill-Street, Westminster, and Mr. WILLIAM BARRIDGES, Milbank-Street.

Reference

Reference to the Engraving of Mr. WM. BOWLER's Apparatus for drying Grain and Pulse, Plate 2, Figs. 1, 2, 3, 4, 5, 6.

THIS machine for drying grain in wet seasons is represented in two end views in Figs. 1, and 2, and the section in Fig. 3 and parts thereof in the other figures.

The body of the machine is to be made externally of sheet iron, and lined with a composition of lime, bullock's blood, and sea-sand, to render it fire proof. The fire of coal or wood is to be made in the fire place *a*, the heat of which will ascend and fill the chamber, but is confined by the cover or iron plate, Fig. 4, which is to be placed in the machine, resting upon the ledges *b b b*; the smoke passing along beneath this plate will discharge itself by the pipe *c*, either by connecting it with the chimney of a room by a straight pipe, or allowing it to pass off in the open air by an elbow joint, as may be found most convenient.

The iron plate, Fig. 4, being heated, the iron box, Fig. 5, containing the grain or articles intended to be dried, is placed in the machine above the iron plates, and has two pivots *h h*, which are to be placed on the sliders *d d*, and from the heat communicated to the box, the operation of drying the grain is carried on, and the steam permitted to escape through holes perforated in the lid, as shown in Figs. 1 and 2.

When the grains in the underside of the box are presumed to be sufficiently dry, instead of the common troublesome mode of turning them with a shovel, take two iron rods or bars *i i*, and bearing against the nobs *e* and *f*, raise the sliders *d d* at each end of the machine, and pushing the rod or bar forward over the nob *g*, the sliders will
remain

remain up with the seed-box suspended, as in Fig. 2, when, by placing a winch or handle on the square of the box-pivot *h*, the box containing the grain may be reversed, and the part which was uppermost will now be at the bottom, and the grain which has been dried be at the top.

By withdrawing the rods or bars *j j*, the box will be again lowered, and the grains which had been previously at the top will now be exposed to the heat.

In order to prevent the loss of grain in emptying the box, a hopper, Fig. 6, is to be attached to the machine at *k*, Fig. 1, at the bottom of which are hooks to hold a sack to receive the grain when dry; *l* is the ash-hole under the fire-place: *m* is a fender or guard, which may be slid up and down to close the fire-place, or regulate the fire; *n n* are iron bars, which may be drawn out for the purpose of carrying the machine by hand: *o* the small contrivance for baking and boiling.

As a portable machine by hand it will probably be too small to carry on the drying of grain to a sufficient extent, but may possibly be found very useful in drying late crops of beans or pulse.

A machine however on this principal may be constructed sufficiently large to answer any purpose of the farmer; the present one may be easily removed from house to house.

The inventor calculates that a portable machine to dry eight bushels of grain at once, and to be managed by one person would cost about twelve pounds.

* * The Committee on minute consideration of the apparatus, were of opinion it is ingenious, and may be useful on some occasions, but not to the extent supposed by the inventor.

Mr. W^m Boutler's Machine for drying Grain or Pulse.

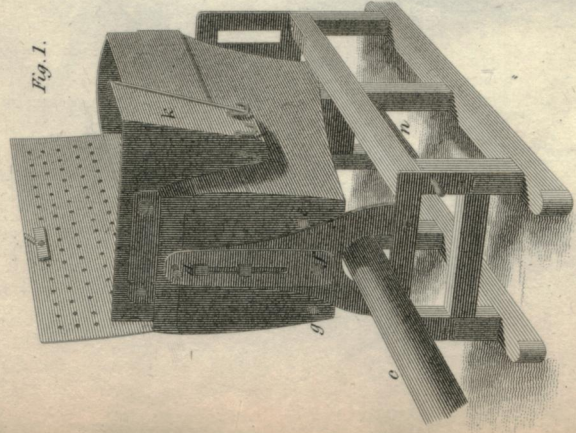


Fig. 1.

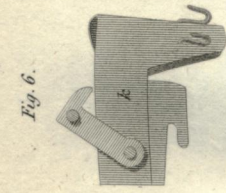


Fig. 6.

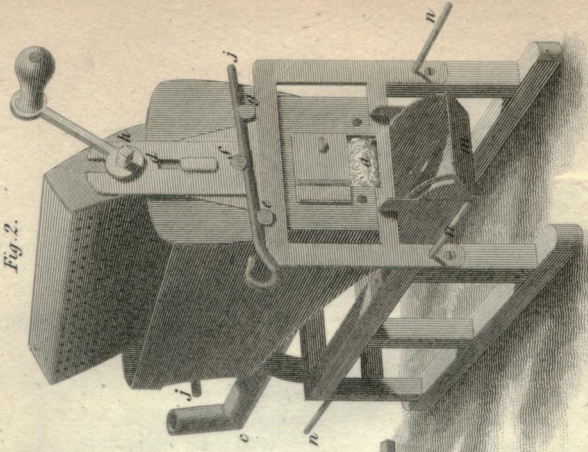


Fig. 2.

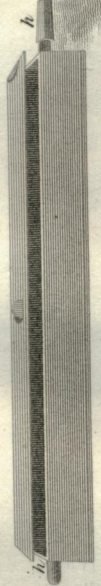


Fig. 5.



Fig. 4.

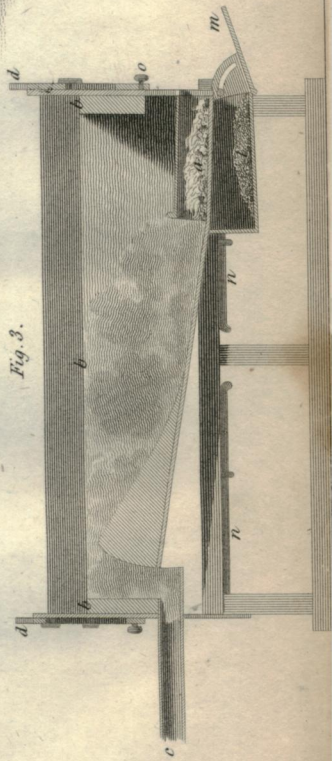


Fig. 3.